

## New claims

1. A method of removing sulfur compounds from hydrocarbon-comprising gases, wherein catalysts, with the exception of activated carbon and zeolites, which comprise from 5 to 70% by weight of copper, silver, zinc, molybdenum, iron, cobalt, nickel or mixtures thereof and from 30 to 95% by weight of oxides from groups IIB, IIIB, IVB, VIB, VIII, IIIA and IVA of the Periodic Table of the Elements which are solids up to at least 250°C are used and the method is carried out at temperatures of from 15 to 40°C and under atmospheric pressure.
2. The method of removing sulfur compounds from hydrocarbon-comprising gases according to claim 1, wherein copper-comprising catalysts are used.
3. The method of removing sulfur compounds from hydrocarbon-comprising gases according to claim 1, wherein molybdenum-comprising catalysts are used.
4. The method of removing sulfur compounds from hydrocarbon-comprising gases according to claim 1, wherein copper- and molybdenum-comprising catalysts are used together.
5. The use of the method according to any of claims 1, 2, 3 and 4 for producing sulfur-free hydrocarbon-comprising gases for the preparation of hydrogen.
6. The use of the method according to any of claims 1, 2, 3 and 4 for producing sulfur-free hydrocarbon-comprising gases for the preparation of hydrogen for operation of a fuel cell.

7. A catalyst for removing sulfur compounds from hydrocarbon-comprising gases, with the exception of activated carbon and zeolites, which comprises from 5 to 70% by weight of copper, silver, zinc, molybdenum, iron, cobalt, nickel or mixtures thereof and from 30 to 95% by weight of oxides from groups IIB, IIIB, IVB, VIB, VIII, IIIA and IVA of the Periodic Table of the Elements which are solids up to at least 250°C.
8. The catalyst according to claim 7 for use in a fuel cell system.
9. The use of the catalyst according to claim 7 for removing sulfur compounds from hydrocarbon-comprising gases.